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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/066,614	02/06/2002	Yuqing Xu	219175US0	4478

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EXAMINER

RODEE, CHRISTOPHER D

ART UNIT	PAPER NUMBER
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1756

DATE MAILED: 03/19/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

AS-5

Office Action Summary

Application No.

10/066,614

Applicant(s)

XU ET AL.

Examiner

Christopher D RoDee

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-16 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1-7, 10 and 14-16 is/are rejected.
- 7) ☒ Claim(s) 8, 9 and 11-13 is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on ____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on ____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. ____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 2.
- 4) ☐ Interview Summary (PTO-413) Paper No(s). ____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____

DETAILED ACTION

Information Disclosure Statement

The copending applications cited in the IDS filed with the application papers have been considered.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

Claims 1-6 and 14-16 are rejected under 35 U.S.C. 102(b) as being anticipated by Patel *et al.* in US Patent 5,723,252.

Patel teaches a process of (i) preparing a pigment dispersion comprised of a pigment dispersed in an ionic surfactant; (ii) shearing said pigment dispersion with a latex or emulsion blend comprised of resin particles and a counterionic surfactant; (iii) heating the above sheared blend below the glass transition temperature (T_g) of said resin particles to form electrostatically bound toner size aggregates; (iv) adding a stabilizer of in situ tricalcium phosphate solid particulants generated from a solution of calcium chloride and trisodium phosphate; (v) heating the mixture of (iii) and (iv) above about the T_g of the resin particles to obtain toner size particles

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comprised of resin and pigment; (vi) washing with an acid to dissolve the trisodium phosphate; and (vii) optionally washing with water, and optionally drying the toner obtained (Abstract).

Patel discloses a specific process of making a toner in Example II. In the Example, 260 grams of an emulsion polymerized latex (40 percent solids) having a Tg of 55.1 (see Example I; col. 14, l. 21) were simultaneously added with a pigment dispersion comprised of 7.6 grams of SUNSPERSE CYAN 15:3 (53.4 percent solids), 2.3 grams of a cationic surfactant, and 240 grams of water to 400 grams of water while shearing. The mixture was then transferred into a reaction kettle and heated to a temperature of 45 °C in order to perform aggregation while being stirred with a mechanical stirrer. The aggregation was performed for a period of 2 to 4 hours. In this sequence of steps, the latex contains 104 g of solids (40% of 260 g) and 156 g of liquid (60% of 260 g). The pigment dispersion contains 4.1 g of solids (53.4 % of 7.6 g) and 3.5 g of liquid (46.6 % of 7.6 g). The cationic surfactant does not appear to be a solid component in the liquid. The total solids is 104 g + 4.1 g or about 108 g. The total weight of the mixture is 260 g + 7.6 g + 2.3 g + from 240 g to 400 g. Thus the total weight of the components is 509.9 g to 669.9 g. The concentration of solids is from 21.1 % (108/510) to 16.1 % (108/670). The values fall within the solid content required for the claimed "C1".

Patel continues by preparing the in-situ tricalcium phosphate (TCP). In this process, 78.6 grams of sodium phosphate were dissolved in 300 grams of water. In a separate beaker, 45.3 grams of calcium chloride were dissolved in 300 grams of water. 200 grams of each of the above solutions were added simultaneously to 200 grams of water, while being sheared. The amount of in situ TCP generated in this Example was 21.3 grams. The weight of solids for the TCP is 21.3/600 or 3.55 % solids.

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After 3 hours at 45 °C, the aggregate particle size measured was 5.8 microns in volume average diameter with a GSD of 1.18. The above aqueous in situ TCP particulate solution was then added to the reaction kettle (i.e., the same vessel where aggregation occurred) and its temperature raised to 90 °C to coalesce (i.e., fuse) the aggregate particles into toner having a volume average particle size of 6.0 µm with a GSD of 1.20. This temperature is about 35 °C above the resin Tg. During this coalescence step (i.e., aging) the concentration of solids ("C2") is calculated as the sum of 108 g (latex + pigment) and 21.3 g (TCP) divided by the sum of 600 g (total weight of TCP dispersion) and either 510 g or 670 g (from latex and pigment suspension). This concentration is 11.6 % to 10.2 %. C2 is therefore either **0.55C1** (11.6/21.1) or **0.63C1** (10.2/16.1).

Examples III-V are similarly applicable to the instant claims.

The reference states that the in-situ TCP controls the size of the aggregates (col. 3, l. 2-8). The reference also states that TCP acts as a solid stabilizer to retain the particle size and GSD of the aggregated particles (col. 4, l. 6-13). The TCP is thus seen as acting as a terminator of further aggregation (i.e., agglomeration) as required by pending claim 5.

Claims 15 and 16 are rejected because these claims do not exclude heating as performed in Patel's agglomeration step.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 7 is rejected under 35 U.S.C. 103(a) as being unpatentable over Patel *et al.* in US Patent 5,723,252 in view of Kmiecik-Lawrynowicz *et al.* in US Patent 5,965,316 and further in view of Tomono *et al.* in US Patent 4,997,739.

Patel was described above. This reference does not disclose the preparation of the latex using a wax as a seed for polymerization, but Kmiecik-Lawrynowicz teaches an aggregation and coalescence process for forming a toner where the polymer particles for aggregation are formed by emulsion polymerizing monomers around a wax seed followed by aggregation and coalescence (col. 7, l. 16-38 & 42-58; Example 1). This process increases the rate of wax incorporation in the toner (col. 1, l. 46-59). The reference teaches that waxes are known to be incorporated into toner compositions (col. 13, l. 60 - col. 14, l. 63), as offset prevention additives. See Tomono '739 incorporated by reference in Kmiecik-Lawrynowicz (col. 13, l. 62).

It would have been obvious to one having ordinary skill in the art at the time the invention was made to use an emulsion of wax encapsulated polymer particles as the latex particles that are agglomerated in Patel because Kmiecik-Lawrynowicz teaches that this structure incorporates the wax inside the toner particles and teaches that wax is a well known offset preventing agent in the art. The artisan seeking to obtain the benefits of offset prevention in Patel, which is well known in the art noting Tomono, would look to Kmiecik-Lawrynowicz to find an expedient method of adding the wax to Patel's toner.

Claims 10 is rejected under 35 U.S.C. 103(a) as being unpatentable over Patel *et al.* in US Patent 5,723,252 in view of Yamashita *et al.* in US Patent 5,576,393.

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Patel was described above. This reference does not disclose the ratio of Dv/Dn as specified in instant claim 10.

Yamashita discloses toners for Electrophotography (col. 1, l. 21-22) produce high quality images, have excellent cleaning performance and image transfer and high triboelectric chargeability when the particles are substantially spherical, have a particle size distribution that the volume mean diameter dv thereof is $1 \leq dv \leq 15$ (μm), and the ratio dv/dn is $1 \leq dv/dn \leq 1.2$ (col. 2, l. 35-42; col. 4, l. 1-30).

It would have been obvious to one having ordinary skill in the art at the time the invention was made to produce the toner of Patel with a relationship of $1 \leq dv/dn \leq 1.2$ because Yamashita teaches that this feature permits a toner to give images with uniform quality, particularly for dot images, and has a longer storage life (col. 4, l. 21-30).

Allowable Subject Matter

Claims 8, 9, and 11-13 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Conclusion

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Ohno USPAP 2001/0033983 teaches that residual monomer content of 500 ppm or less is desirable in a toner because amounts larger than this value cause the toner to have charging and antiblocking problems (§ [0062]). Onuma *et al.* in US Patent 5968701 teaches specific loss and storage modulus characteristics for a toner but the binder resin is a crosslinked resin, as seen by the THF insoluble content (col. 8, l. 57 - col. 9, l. 17; col. 11, l. 20+; col. 17, l.

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13+), which is different from the resin produced in Patel, particularly the examples. Applicants' remarks concerning JP 2000-131882 on specification page 3 have been relied upon.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Christopher D RoDee whose telephone number is 703 308-2465. The examiner can normally be reached on most weekdays from 6 to 4:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Mark Huff can be reached on 703 308-2464. The fax phone numbers for the organization where this application or proceeding is assigned are 703 872-9310 for regular communications and 703 872-9311 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703 308-0661.



CHRISTOPHER RODEE
PRIMARY EXAMINER

cdr
March 14, 2003